

CLAIMS

[1] An imaging apparatus, comprising:
an imaging device comprising a plurality of pixels having a
photoelectric conversion function; and
5 a microlens array comprising a plurality of microlenses that form
subject images on the plurality of pixels in the imaging device and are
arranged in a matrix;
wherein the microlens array comprises grooves in a lattice form
between the microlenses that are adjacent to each other, and a depth of the
10 grooves is larger than a half of a thickness of the microlens array.

[2] The imaging apparatus according to claim 1, wherein a material of
the microlens array comprises a light-transmitting resin.

[3] The imaging apparatus according to claim 1, wherein the microlens
array is a plano-convex lens array whose one surface is provided with the
15 microlenses and whose other surface is provided with the grooves and faces
the imaging device.

[4] The imaging apparatus according to claim 1, wherein a
light-absorbing material is applied to lateral surfaces of the grooves.

[5] The imaging apparatus according to claim 4, wherein the
20 light-absorbing material is black.

[6] The imaging apparatus according to claim 1, wherein a width of the
grooves increases toward the imaging device.

[7] The imaging apparatus according to claim 1, wherein a second
material having a smaller light transmittance than a first material forming
25 the microlens array is filled in the grooves.

[8] The imaging apparatus according to claim 7, wherein the second
material comprises a material having a light-absorption function.

[9] The imaging apparatus according to claim 7, wherein the second
material has a larger refractive index than the first material.

30 [10] The imaging apparatus according to claim 1, wherein the microlens

array is manufactured by a resin molding.

[11] A method for manufacturing a microlens array, comprising:

obtaining by a resin molding a microlens array whose one surface is provided with a plurality of spherical or aspherical microlenses and whose
5 other surface is flat; and

forming grooves in a lattice form on the other surface of the microlens array by a light irradiation from the other surface.

[12] The method for manufacturing a microlens array according to claim 11, further comprising processing lateral surfaces of the grooves to be black
10 by injecting a solution prepared by dissolving a black coating material in a solvent into the grooves.

[13] A method for manufacturing a microlens array, comprising:

obtaining a microlens array whose one surface is provided with a plurality of spherical or aspherical microlenses and whose other surface is
15 provided with grooves in a lattice form and is flat except for the grooves; and

processing lateral surfaces of the grooves to be black by injecting a solution prepared by dissolving a black coating material in a solvent into the grooves.